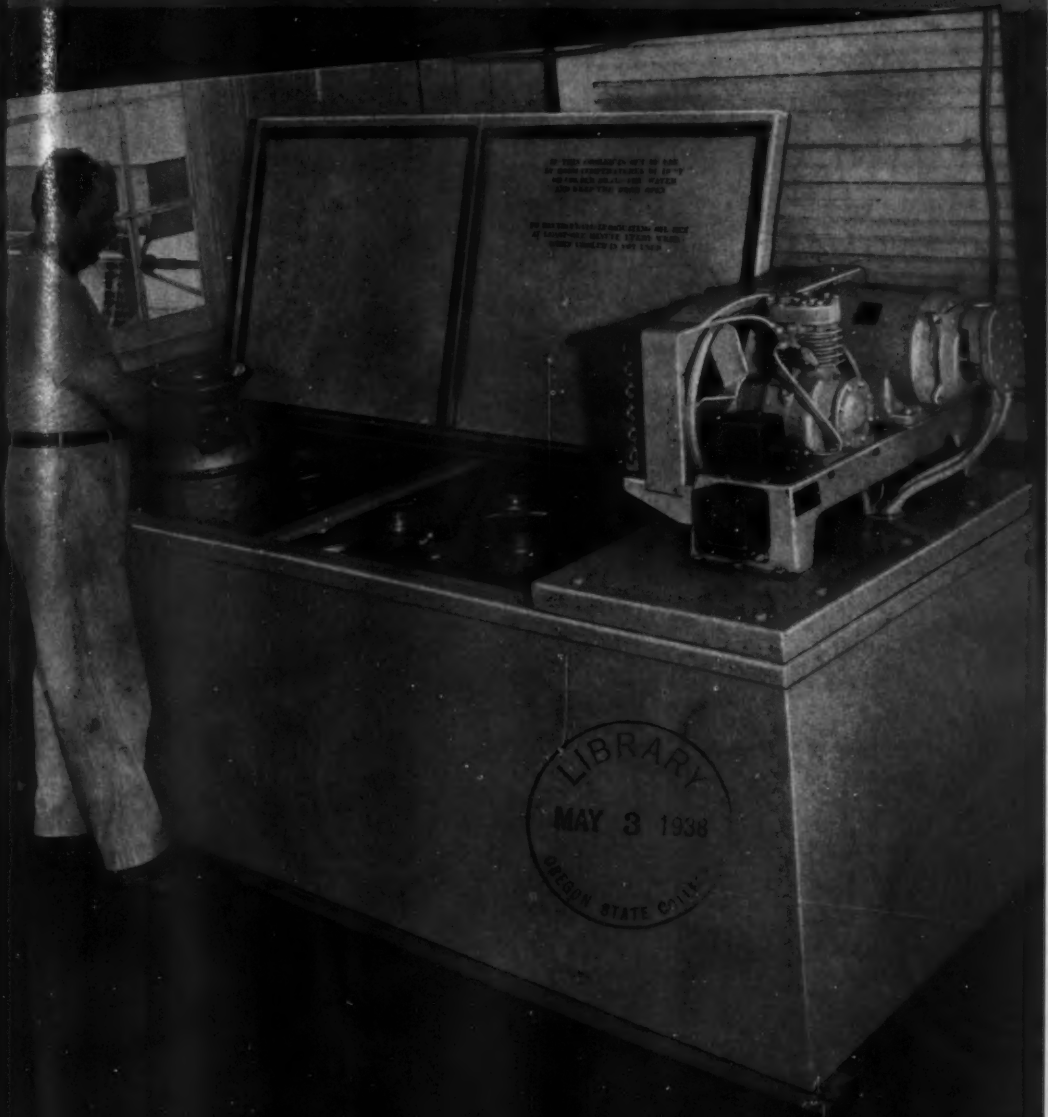
Electricity on the Farm

A MONTHLY MAGAZINE FOR THE UP-TO-DATE RURAL FAMILY



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MAY, 1938

MORE PROFIT FROM MILK—WATER WORKS FOR THIS FARM—METERS TELL FARM COSTS—FRESH BERRIES FOR CHRISTMAS—ELECTRICAL HOUSEKEEPING AND OTHER REGULAR FEATURES

Cover Title Contest

SEE INSIDE BACK COVER

GET A "G-E
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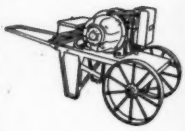

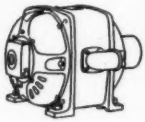

G-E motors are available in all sizes and in portable and stationary types

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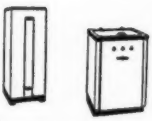

Above are shown the General Electric water heater and automatic dishwasher, both of which bring new comfort and convenience to the farm

Thousands of Farmers Will Tell You "G-E Motors Last Longer"

SUCCESSFUL farmers have learned by experience what industrial plants have learned by keeping accurate cost records—that G-E motors last longer, cost less to operate.

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G-E high-quality motors are inexpensive—for example, you can buy a G-E ¼-hp motor for as little as $8.10. To assure getting the right motor, see your G-E Motor Dealer or return this coupon.

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General Electric, Rural Electrification Section,
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Without obligation, please quote me on a ..... volt motor to drive..... (machine)
of approximately .....hp.

Name.....RFD.....

P. O.....State.....

98-6

EVERY FARM HOME CAN ENJOY THE EXTRA ADVANTAGES OF THESE DEPENDABLE CID WATER SYSTEMS

These powerful, substantially built Goulds CID Water Supply Systems give you dependable service and all the convenience you could want—running water with city pressure from every faucet in the house. Keep your family healthy and happy. Keep farm produce cool and fresh, and get higher market prices. Protect your buildings from the dangers of fire.

Goulds CID Water Supply Systems with their quiet, smooth-running pumps are reliable and economical to operate—give you every desirable feature at no extra cost.

The high quality of CID Deep and Shallow Well Water Supply Systems is the result of ninety years' experience in furnishing pumps for every need. Send in the coupon NOW for detailed information!

Illustrations: Left, Goulds CID Water Supply System for deep wells; Right, Goulds CID Water Supply System for shallow wells.

RUNNING WATER

MAIL THIS

GOULDS

GOULDS PUMPS, Inc., 340 Fall Street, Seneca Falls, N. Y.

Please send me the name of the nearest Goulds Distributor. I am interested in a pump for deep well ☐, shallow well service. ☐

Name _____

Street or R.F.D. _____

Place _____ **State** _____

8298

Editor's Chat

RED ROSES

Mother's Day comes in May. Red roses; white roses.

Mother's day is every day! Cooking, dishwashing, mending, canning, ironing, in the garden, with the hens and chicks, carrying water. "Carrying water?" For shame, No! But too often, yes. Tons and miles in a year.

Recently I returned from a trip through the North Carolina mountain country. While there I visited farms; low income farms; farms where the buildings were not elaborate, but farms where a spark of inspiration had struck. They had installed electric pumping systems and plumbing; not just a faucet at the sink, but good kitchen equipment and complete bathrooms —showers, tubs and toilets—with hot and cold water and modern septic tanks. The cost ranged from $300 to $500 complete with water system. If you want to see happy faces and hear cheery voices, visit a farm that has had such an installation for a month. And try to buy the system for what it cost.

Perhaps nothing contributes so much to health, happiness and the elimination of drudgery on the farm as running water and modern plumbing. It has dollars and cents value and frequently costs less than running water in the city.

Does mother have a tractor on her washboard, horses on her broom and a machine for grinding out clean dishes?

Wear roses on Mother's Day! The sentiment is fine. But for the mother of your children, one of the most beatuiful red roses for the "every-day-mother's-day" is a modern plumbing system.

THE DOG HOUR

Dinner is over; the dog is fed; it is eight-thirty.

Bruno stands inside the apartment door, vibrant, jumpy with expectancy. Outside the taxis dash, the policeman whistles, and folks go South with his wave instead of West. The master comes with the leash, fastens it to Bruno's collar, and away they go down the elevator into the street. It's the dog hour.

Eagerly Bruno sniffs each lamp post. Where is friend or foe? Where is a dog to romp or fight? Oh, yes! He slips between parked cars while Master waits and holds the leash. Master's do that in New York. Bruno is a well trained dog. The street cleaner will be there in the morning.

And now he strains at the leash, wears pads and claws against the concrete around the block. He barks defiance at the passing dog, snarls when restrained and is grabbed in arms to prevent a brawl. Oh, for a barnyard in which to run, a horse to be given a friendly bark, a house to guard!

City folks in silks, in furs, in rags; they love dogs. They must. There's the dog hour.

—I'm proud I am a farmer—

CHARLESTON

If you are interested in history—the early history of our country—the houses and farms where it was made; in beautiful gardens of gorgeous azaleas, camellias, and wisteria; in a city without tall buildings and with the quaintness of Colonial days; where business is transacted calmly without the insane rush of the metropolis; where old Fort Sumpter stands guard; and where the handshake is more friendly, if not so vigorous as in the West; visit Charleston in the springtime.

GEO. W. KABLE.

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MORE PROFIT FROM MILK

By E. R. MEACHAM

Electric Refrigeration Makes Money by Cool Calculation and Opens New Markets for Milk

Mr. Meacham is an Agricultural Engineer with many years experience in educational work and rural service. He is with the Wisconsin Power & Light Co., Madison, Wis.

SPRING came early in our part of the country this year. It was really hot one Sunday last month when Max Curtis came over to see me.

"I've already begun to wonder what I'm going to do with my milk this summer," he said. "I can take it to the cheese factories, of course, but during the hot weather I'll have to haul it twice every day, and that's a lot of work."

"The city milk plant will give you a better price," I told him, "and pick up your cans right at your milk house."

"They will, if my milk passes their test for quality," he replied, "but it won't do that, unless I cool it. Say, are these electric coolers really practical? What sort of a set-up would I have to have?"

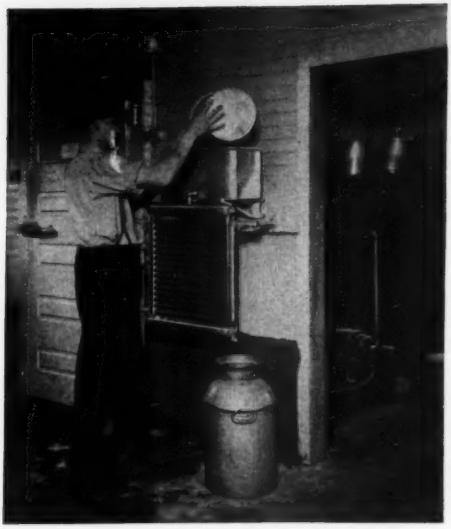
I assured Max that modern electric milk coolers are practical and convenient. They are really economical for anyone with a market that pays for quality in milk. Nowadays, with good roads and the rapid spread of truck transportation, good markets are available nearly everywhere. The market seeks the man who is alert and energetic enough to safeguard the quality of the milk—and pays him well for his extra effort.

"For milk sold in cans," I told Max, "you need an outfit about like J. H. Arnold's over near Hagaman. The Arnolds have a ⅓ horse power refrigerating machine mounted on half the cover of an insulated tank that holds six cans. The other half of the thick cover is hinged so that it will open. Completely encircling the inside of the tank are the cooling coils of copper tubing through which the refrigerant flows. When there is enough water in the tank to cover the coils, and the machine is set going, ice forms on the tubes until there is a solid wall of it two to four inches thick all around the tank.

"By this method, the cooling process is automatic. It doesn't add to the work or take a minute of anybody's time. As each can is filled at milking time, it is just set into that tank of cold water completely surrounded by ice, and never touched again till the milk truck comes and the driver picks it up for delivery."

"What about stirring?" Max asked. "When cooling with water, you have to circulate the water and usually stir the milk, too."

"With a big reserve of cold already stored up in the ice on the coils, and the power to make more as the warm milk melts that away, it isn't



Where milk is bottled it must first be cooled like this. Note the storage room door at the left.

really necessary to stir the water or the milk in an electric cooler. If there is plenty of time to complete the cooling before the milk must be taken out, the results will be just as good, and the process a littler simpler, without stirring. However, stirring the ice cold water does cool the milk *quicker*, so if there isn't much time between morning's milking and delivery, an agitator in the tank will help. Water agitators are built right into many electric cooling tanks. With a little propeller, or pump, or blast of air, they cause the water to circulate, and may cut down the cooling time as much as one half."

"If I can cool it and store it with no work at all," suggested Max, "I'd better bottle it, then, and distribute it myself."

"That might be a good idea," I agreed. "But it will require a different cooling equipment. You don't want to store cases of bottles in a tank of water. You'll have to cool the milk over an aerator first, and then store it in a dry box or cold room. That will *keep* it perfectly, but dry air isn't very effective for *cooling* milk in bottles. If you want to see a good set-up for retail milk, you ought to see Kenneth Stevenson's over at Dane. Let's run over to his place in the car."

In the neat milk house on the Stevenson farm we found an aerator set up near the heavy insulated door of the storage room. It was connected by pipes to the automatic electric water system.

They could use brine to cool the milk, Mr. Stevenson told us, but they have lots of naturally cold water so it is cheaper to use that. Running the milk in a very thin film and using six or eight gallons of water in the pipes for every gallon of milk cools it very well. They bottle immediately and store the cases of bottles in the storage room at a temperature of 40 degrees. For immediate delivery the milk could be cooled an additional 15 degrees by circulating brine through the lower half of the surface cooler or having it connected to the refrigerating machine.

Heat Absorber Cools Room

The Stevenson milk-room was nearly freezing cold but the only cooling equipment in it is a small box bolted to the ceiling. It looks like a radiator, but it has exactly the opposite effect—it absorbs heat so that it can be pumped out of the room.

The refrigerating machine that accomplishes all this is just like those on milk cooling tanks and very similar to the unit in a household refrigerator. Thermostats control its operation so that it runs only enough to hold the room at 40 degrees.

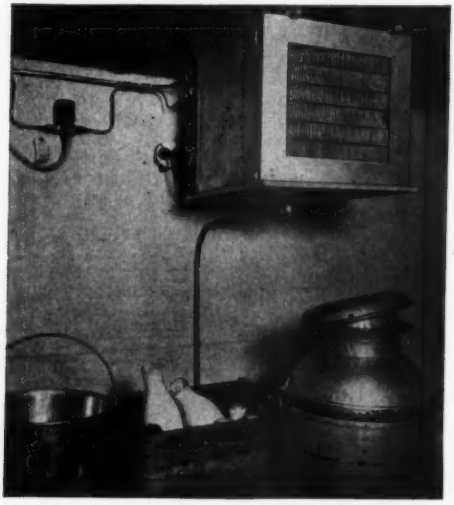
The most satisfactory temperature for cooling tanks where cans are held 12-14 hours is generally about 45 degrees, but storage rooms for bottled milk are usually cooler.

It has been found that using a surface cooler to bring milk down to 70 degrees before the cans are put into a tank gives even quicker cooling than circulating the water in the tank, but has no better effect on the milk. This pre-cooling with water does save a little electricity, but usually not enough to pay for the extra equipment or the labor of the extra operation and washing the aerator.

None of the typical farm outfits that we knew about were separately metered to show the exact cost of electric cooling. We went home and studied experiment station bulletins for that. We found, of course, that there is a wide variation depending upon the location, the size, and the inbuilt efficiency of the compresssor unit and upon the construction and operation of the storage compartment.

We found reliable reports of the totai costs of electric cooling, including labor and all fixed char-

(Continued on page 34)



This is what makes the storage room cold. The box at the top is just the opposite of a radiator. It is a very efficient heat absorber.

WATER WORKS FOR THE FARM

By HERBERT C. ANGSTER
Secretary, Electric Water Systems Council

THE PURPOSE of this article is to explain the various types of water systems, to offer suggestions on the selection of a pump, and in general to outline the points which should be taken into consideration in the choosing and installation of a water system.

Tremendous advances have been made in farm water systems in recent years. The modern water system is entirely automatic and should require only an occasional inspection to check mechanical condition and state of lubrication.

The term "automatic" in this case means exactly what it says—a modern water system will:

1. Automatically maintain pressure at the faucets;
2. Start and stop automatically;
3. Lubricate itself automatically;
4. Be protected from damage due to excess pressure resulting from possible failure of any of the automatic devices.

There are two types of such automatic systems:

1. *Hydro-pneumatic system.* This is illustrated in diagram 1. It consists of a pump and a closed or pneumatic storage tank in which a cushion of air is maintained under pressure to force water from the tank through the service pipes to the faucets.

2. *Gravity System.* This consists of a pump and an overhead tank. The tank may be placed in an attic or on an elevated tower outside. The water flows from the tank to the faucets by gravity or pressure due to its elevation.

There are advantages and disadvantages for each system. The trend, however, is very definitely toward the hydro-pneumatic system. Some manufacturers report that nine out of ten systems sold are pressure systems.

Pressure Systems Have Advantages

One of the advantages of the pressure system is that, as implied by the name, a greater and more uniform pressure can be maintained. The matter of pressure is particularly important in case of fire.

Another advantage of the hydro-pneumatic system is that the pump and tank are more or less of a unit. This makes for greater ease in servicing, repairs, and drainage.

A large elevated tank gives some reserve storage which would be an advantage in case of power interruptions or pump breakdowns. A 42 gallon tank, however, will usually tide over any power shortage, and modern pumps are very reliable. The pressure tank is cheaper than a gravity tank and tower and will provide 20 to 40 pounds pounds pressure whereas a gravity tank at an elevation of 25 feet would produce only 11 pounds pressure.

By locating the tank in the pit with the pump, positive protection against freezing can be assured.

The heart of the automatic water system is the pump. In every installation, regardless of size, type, or location, there are always three factors to be considered. These as illustrated in diagram 2, are:

1. Suction conditions—which determine whether a shallow well or deep well type of pump is to be used and where the pump is to be located.
2. Water required—which determines the size of pump to be used.
3. Discharge conditions—which determine class of pump to be used, i. e., whether low, medium or high pressure.

From the standpoint of suction conditions, there are two general types of pumps: Shallow well or suction pumps and deep well pumps.

The shallow well pump is the type most commonly used. It is limited to 22 feet of suction lift.

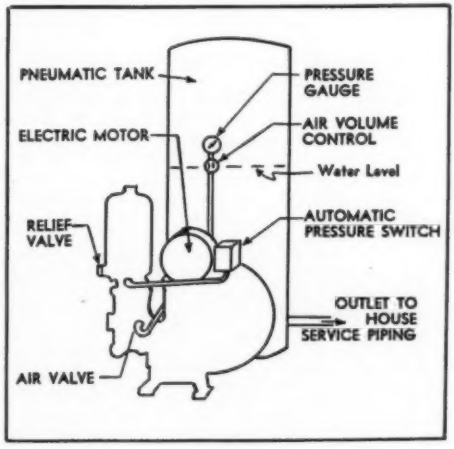


Diagram No. 1. Showing parts of a hydro-pneumatic water system.

Contrary to the general conception, this type of pump does not "suck" water but rather creates a vacuum into which the water is forced by ordinary atmospheric pressure.

Every pump has two essential parts, namely the power end and the water end.

In the case of the shallow well pump, the water end is stationary or "built-in." In the case of the deep well pump, the water end or cylinder is separate thus making it possible to pump water from a depth greater than 22 feet.

Various sizes and models of shallow and deep

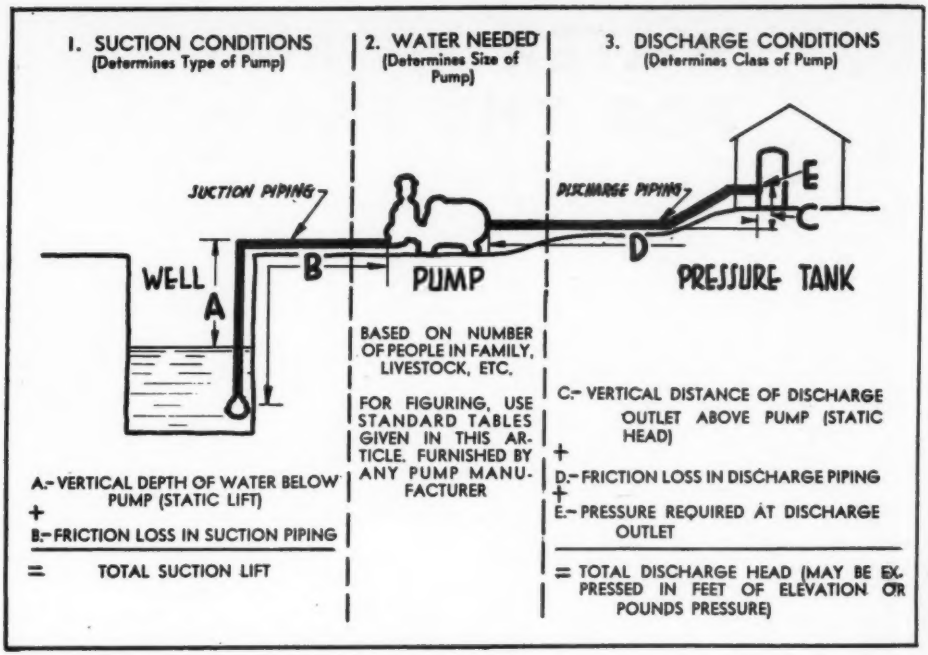

1. SUCTION CONDITIONS
(Determines Type of Pump)
2. WATER NEEDED
(Determines Size of Pump)
3. DISCHARGE CONDITIONS
(Determines Class of Pump)
SUCTION PIPING
DISCHARGE PIPING
WELL
A
B
PUMP
D
E
C
PRESSURE TANK
BASED ON NUMBER OF PEOPLE IN FAMILY, LIVESTOCK, ETC.
FOR FIGURING, USE STANDARD TABLES GIVEN IN THIS ARTICLE. FURNISHED BY ANY PUMP MANUFACTURER
A.- VERTICAL DEPTH OF WATER BELOW PUMP (STATIC LIFT)
+
B.- FRICTION LOSS IN SUCTION PIPING
= TOTAL SUCTION LIFT
C.- VERTICAL DISTANCE OF DISCHARGE OUTLET ABOVE PUMP (STATIC HEAD)
+
D.- FRICTION LOSS IN DISCHARGE PIPING
+
E.- PRESSURE REQUIRED AT DISCHARGE OUTLET
= TOTAL DISCHARGE HEAD (MAY BE EXPRESSED IN FEET OF ELEVATION OR POUNDS PRESSURE)

Diagram No. 2. Three factors to consider in selecting an automatic water system.

well pumps are made to meet varying conditions of pressure and capacity. A detailed explanation of the various models with their particular application to conditions will be given in the second article in this series which will appear in the June issue.

We turn now to a consideration of water requirements in the farm home. As previously indicated, the volume of water required is an important factor in the selection of the pump.

When water is used for household purposes only, the size of the family or the number of persons using the water is all that need to be taken into consideration. If, however, lawn sprinkling, car washing, stock watering or other auxiliary uses are to be considered, then a careful analysis of the requirements must be made. Tables given in the article on Planning the Farm Water System in the March issue may be used. They are repeated here with some additions.

General Requirements

	Approx. Gallons per Day
For each member of the family, for all purposes, including the kitchen, laundry, bath and toilet purposes...	35
Each horse	10
Each cow	15
Each hog	2
Each sheep	1½
Each 100 chickens	4
Drinking fountains	50 to 100

The actual consumption for each member of the family and for each animal will vary considerably with the season, climatic conditions, location, and other factors. In hot, dry climates or under high production, stock may drink considerably more water.

Home Fixtures

	Gallons
Filling the ordinary lavatory	1½
Filling the average bathtub	30
Flushing a water closet	6
Each shower bath	30

Yard Fixtures

	Gallons per Hour
¾-inch hose with nozzle	275 to 300
Lawn sprinkler	120

In selecting a pump it is, of course, necessary, for satisfactory service, to have a pump capacity in excess of the actual requirements for any given period.

For Example: If a ¾-inch nozzle is to be used for sprinkling, this will consume water at the rate of 275 to 300 gallons per hour, and it is therefore essential, to permit use of water for other purposes at the same time, to have a pump capacity in excess of 300 gallons per hour. Where a ¾-inch nozzle is to be used, we recommend the use of a pump having a capacity of at least 320 gallons per hour, which leaves available for other uses water at the rate of 20 gallons per hour when the hose is being used.

In determining desired pump capacity even for ordinary requirements it is advisable to select such a size as will not necessitate the pump running more than a few hours per day at the most.

Whether the system is hydro-pneumatic or gravity, the question of the size of the tank is an important one. Indeed, except for extreme cases where large quantities of water might be desired for irrigation or watering stock, the pump capacity is secondary to the size of the pressure tank.

The distinctive feature of the hydro-pneumatic

system, as previously explained, is that water is pumped into an air-tight tank. The air in the tank is compressed thus building up a working pressure that will force the water out of the tank as soon as an outlet is opened. As a rule, one-third of the tank capacity is air. Only about one-third of the water can be withdrawn before the tank pressure is reduced to below working pressure.

Thus it can be seen that the tank capacity of a home water system is very important. A five-gallon capacity tank would provide working pressure but only about one and one-third gallons of water could be withdrawn before the pump would start running. A motor consumes most current in starting. The more times during the day the motor is started, the greater the cost of pumping the water.

To this may be added the inconvenience of the frequent starting of the pump. No matter how quiet a pump may run, it is a disturbing noise at night when the flushing of the toilet could cause the starting of the pump coupled to a small tank.

Popular tank sizes are the 42- and 80-gallon tanks. The 42-gallon tank is the generally accepted standard of most water system manufacturers for the household requirements of the average family. On the other hand, the 80-gallon size, while more expensive, allows fewer stops and starts, and gives greater storage capacity to meet peak demands. As a general rule, a tank 20 times the capacity of the pump in gallons per minute should be used.

Air, of course, is soluble. Unless a constant supply of new air is provided by the system, the tank will soon become water-logged, that is, there will be too much water and too little air for pressure. To insure a constant supply of air, all of the better pumping units are equipped with an air pump. This device operates in conjunction with an automatic air-volume control.

The pressure switch, which controls the starting and stopping of the pump is set and tested at the factory. It should not be tampered with in the field. Ordinarily, home water systems operate with a range of 20 to 40 pounds pressure. That means when the pressure gauge shows the pressure has dropped to 20 pounds, the pump automatically starts, building the pressure up to 40 pounds or the cutting out point.

One pound of pressure will raise water 2.31 feet or, in other words, 40 pounds pressure will lift a vertical stream of water 92 feet in height. Considering that some pressure is dissipated by pipe friction, particularly where long pipe lengths are required, it is obvious that good pump pressure is desirable.

In fact, the matter of pump capacity and pressure as well as adequate tank capacity cannot be overemphasized. Too many homes are equipped with a water system that is entirely too small. It may have been large enough when it was installed, but rare, indeed, is the home with what might be called a stationary population. In fact, a high per capita consumption of water is one of the distinctive characteristics of the American standard of living. We Americans use more water and more soap than any other nation.

Water is the first thing we want in the morning and the last thing before we retire. We need plenty of water at the kitchen sink, the toilet and bath, for cleaning and scrubbing, for watering the lawn, for poultry and livestock. Therefore, the sensible thing to do is to put in a system that will not only supply water when it is wanted, but plenty of it, and with some reserve capacity.

The National Housing Act was recently amended to make it possible for the farmer to have a water system installed on easy monthly or seasonal payments spread over a period of up to five years.

The insured loan provisions of the National Housing Act apply to the complete installation—the drilling of the well or the digging of the cistern, the pump and its installation, the well pit, the necessary pipe, valves, and fittings, the tank, the plumbing fixtures, and the waste water disposal system.

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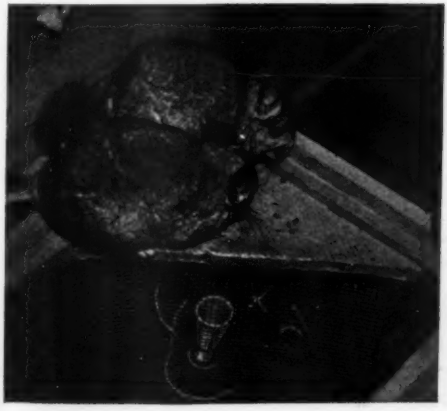
$1600 CHINCHILLA BABIES

Warmed with Electric Heat

By BEN MAXWELL
Oregon Farmer and Writer



THIS PAIR of chinchillas, a South American rodent highly valued on account of its deep, rich fur and only recently imported into North America, is worth $3200. They are here seen atop of an electrically heated brooder box at the Andean Chinchilla Farm operated by William Ashby near Salem, Oregon.

Since a full length chinchilla fur coat is valued at around $80,000, chinchillas are recognized as perhaps the most valuable fur bearing animals in America. As yet all stock available in the United States is reserved for breeding rather than pelting.

At the Ashby fur farm the chinchillas are gently warmed in a constant temperature of 68 degrees by a thermostatically controlled, 40 watt heating element for 3 or 4 days before and for 40 days after baby chinchillas are born. Cost of electrically heating brooder boxes for baby chinchillas worth thousands of dollars a pair is less than one dollar a month.

Meters Tell
SOME DAIRY FARM COSTS

Electric Service Promotes a Father-Son Partnership on a Well Organized Pennsylvania Farm

By R. U. BLASINGAME

Prof. Blasingame is Head of the Department of Agricultural Engineering, Pennsylvania State College and Past President of the American Society of Agricultural Engineers.

MR. JOHN Y. HOSTETLER operates one of Pennsylvania's well organized farms near the town of Belleville. Years before rural electrification became of National concern, Mr. Hostetler and his neighbors built an electric line to their farms. The use of electric service has gradually increased, and because Mr. Hostetler was interested in operating costs he has kept records of power required for doing the farm jobs.

Dairying is the principal enterprise on the farm. The herd of 24 cows is fed largely on home grown feed produced on the 105 cultivated acres. The father looks after the operation of the farm and the management of the dairy herd, and Harvey, the oldest son, runs a retail milk route in several of the nearby towns and villages.

The dairy barn is equipped with drinking bowls. The home is amply supplied with hot and cold water on tap. The milk house is provided with steam from a boiler and hot and cold water in abundance. All of the water comes from an automatic water system operated by a two horsepower electric motor. Recently a walk-in type milk refrigerator has been installed.

For many years Mr. Hostetler has operated a cream separator with a 1/6 horsepower motor. The cream is sold on the retail route. This separator was metered for six months in 1936. Approximately 19,000 pounds of milk were run through this machine in that time, making 20 per cent cream. The meter showed a current consumption of 6 kilowatt hours of electricity or 1 kilowatt hour for every 3,166 pounds of milk. This separator is so arranged that the motor starts the separator without the use of a hand crank.

A three brush bottle washer is also used by Mr. Hostetler's son for washing bottles for his retail milk route. This machine, driven by a 1/6 H.P. motor washes about 350 bottles a day in the winter and approximately 550 to 600 bottles a day in the summer. The increase in the summer is due to

Left: This machine uses 1 kw-hr. of electricity for every 3,166 pounds of milk separated.
Right: A three-brush, 1/6 HP. outfit which washes 350 to 600 milk bottles per day. It uses 1 kw-hr. per 2,500 bottles.

Upper: The washing for a family of eight required an average of 1 kw-hr. per week over a period of a year.

Lower: The actual ironing time with this machine is about one-third what it was with a hand iron.

additional business and also for an orange drink which is also sold. The consumption for a 12 month period as shown by a test meter, was 43 kilowatt hours to wash approximately 112,000 bottles or 1 kilowatt-hour for every 2,500 bottles washed. The average consumption per month was close to 2½ kilowatt hours in the winter and 5 kilowatt hours in the summer. The repairs and replacements were 2 sets of brushes costing $3.00 which represents about the yearly expense of the bottle washer.

Laundry Equipment Helps

The Hostetler home is also electrically equipped. Tests were made on a washing machine, ironer, and electric iron which extended over a 12 months period. There are eight persons in the family and approximately the following pieces were washed and ironed each week. Five tablecloths, 16 dish towels, 15 hand towels, 6 sheets, 7 pillow cases, 15 to 18 shirts for 5 men, 10 pairs of overalls, underwear for eight people, 8 to 10 house dresses, 5 aprons, and a large quantity of handkerchiefs, stockings and window curtains.

The old washer after operating about seven years was replaced with a new one two months after the test was started. The washer for the 12 month period used 52 kilowatt hours of electricity or one kilowatt hour per week to wash for a family of eight persons.

The electric ironer, which was purchased in December 1935, irons about 90 per cent of all the clothes, including all the rough material, table cloths, sheets, etc. Mrs. Hostetler also irons most of the men's dress shirts and presses 2 suits a month and 5 or 6 pairs of trousers. She says that this is one of the handiest things that she does on the mangle. The machine has a 1500 watt unit. For the year it consumed 208 kilowatt hours of electric current or an average of 4 kilowatt hours per week for a family of eight persons. The actual ironing time is about 1/3 that when it was all done with the electric iron.

Those pieces which cannot be ironed on the ironer, such as curtains, ruffled material, good dress shirts, etc., were ironed with the electric iron. This iron used 43 kilowatt hours of electrical energy or less than a kilowatt a week for the family. It has a 500 watt unit and weighs 6 lbs. The iron is two years old.

Mr. Hostetler has a well organized and ordered farm and home. A good balance is maintained in the use of power and equipment both in the field and in the home and barn. Electricity, in Mr. Hostetler's opinion, is one of the safest, cheapest, most easily controlled helpers to be had.

The intelligent application of power and equipment saves enough labor at the Hostetler farm to make the work interesting and to produce a satisfactory profit. Harvey has a modern truck for the delivery of milk on the route. When his day's work is finished he has a new car to drive.

Here is an example of what a farm can provide: quiet, independence, radio, telephone, good roads, automobiles to get to town, running water, and the many conveniences of electric service. Could the city supply more?

I know it saves time . . .

And the Girls Don't Mind Drying Dishes with an Electric Dishwasher

By ALICE GEER KELSEY

"VERY NEAT and pleasant! But does it save time?" is the question most often asked by friends inspecting our new electric dishwasher.

We asked Mrs. Kelsey what we might say about her to help you to know her. Her answer is such a good companion to her story that we give it to you in full.—THE EDITOR.

* * *

"Briefly, I am the mother of four children between the ages of seven and seventeen. I am one of the large army of "extension widows" who keep the home fires burning while our husbands travel about the state spreading Cornell's gospel of better farming. My husband has been particularly interested of late in spreading the gospel of better power and better lights.

"My reason for becoming a button pushing housewife might be of interest. When our fourth and youngest child started to kindergarten a year and a half ago, I dusted off the old typewriter and sat down to write some of the stories for children and articles about children which I had always lacked the time to do before. However, I soon found that I still lacked the time. Though my mornings were quiet, the housework had a stubborn way of piling up while I sat at the typewriter. My prospects of being able to earn much by writing were too hazy to justify hiring my work done. The solution has been a gradual buying of electrical servants. Though ours is not yet the 100% electrical home, enough of the drudgery is done by electricity that I have some leisure each day for the things I want most to do."

Had it not been for a fortunate incident of a few months ago, I would be forced to answer with a lame smile, "Why, I *think* it does. It surely *seems* to take less time."

As it is, I can smile serenely and say, "Yes, it takes less than half the time of the old method. I have records. Would you like to see them?"

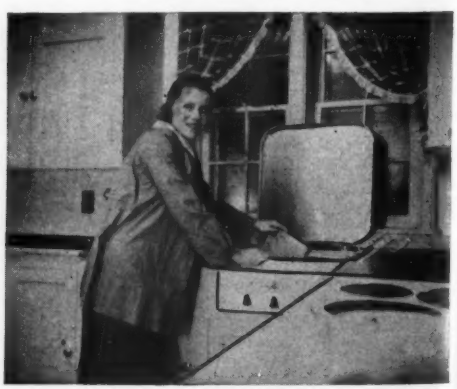
Last spring, before we had the electric dishwasher, I was regretting that I had let myself be inveigled into acting guinea pig for the attractive graduate student from the College of Home Economics who was gathering data for a thesis on dish washing. Fellow Home Bureau members were groaning with me over the chore we had taken upon ourselves. It had sounded noble to be doing something to lighten the burden of the world's dish washers, but the day by day grind of setting down detailed facts about our daily dish washing for three weeks was another matter. One week we washed three times a day. The next week we combined breakfast and lunch dishes. The third week we saved our supper dishes to wash after breakfast. We made note at each washing of the number fed, the number helping with the work, the number and nature of interruptions, and the time consumed.

Having suffered through the record keeping, as well as the dishwashing, I jotted the figures down in a notebook. It would be fun to compare statistics in case my dream of an electric dishwasher should ever materialize.

It did. Six months later we installed our electric dishwasher and I was able to compare the time consumed in washing dishes by hand and by electricity.

In keeping records for the electrical dish washing, I tried to score the same way as before. There are a few qualifying factors to consider before

This is the Kelsey kitchen—before and after. The average time for washing dishes from two meals for six people by the dishpan method was 51 minutes. Using the dishwasher for the same job takes 22 minutes.



comparing the figures. There were far fewer helpers recorded for the mechanical method, as there seemed little necessity to call extra people into the kitchen for so simple a task. It happened more frequently that another member of the family did the complete process, and did it, may I add, without the expression of martyrdom common to young daughters with their hands in the dish pan. We were more prodigal with the use of dishes when electricity was to wash them. The old plea, "Let's eat our dessert on these same dishes to save washing," was abandoned.

When breakfast dishes were washed alone by hand, the washing time averaged 22½ minutes, by machine 11 minutes. When noon dishes alone were washed by the old method, they took 21 minutes on the average, by the new method 17 minutes. It happened that the majority of noon meals recorded for the dishpan method were for two or three people, because the three big children were carrying their lunches to school. On the other hand, the noon meals recorded for the electric method included Thanksgiving dinner and vacation meals when the whole family of six ate at home at noon. The average time given to dish washing at night was 32 minutes by the old method, 13 minutes by the new.

The records I am about to quote include time for clearing the table before washing dishes and for scrubbing kitchen shelves and tables afterward, cleaning the sink and putting away dishes. If the washing and drying time alone were recorded, the contrast between the two methods would be greater as much of this represents time which cannot as yet be lessened by mechanical means.

These figures were fairly convincing, but they were even more spectacular when the averages were combined for washing two meals in a single process. The average time of washing dishes for two meals together by the dishpan method was 51 minutes, by the electric way 22 minutes. I find that with my family of six, the most efficient way to use the dish washer is to combine two or three meals, though I used to hate to leave dishes from one meal to the next when they must be washed by hand.

My average time for washing dishes of three meals at once in the electric washer is 31 minutes. I have no corresponding figure for the dishpan method, and, frankly, I lack the scientific urge sufficient to compel me to collect a day's dishes and wash them by hand just to see how long it would take.

The other advantages of the electric dishwater are so great that the machine would be worth using, even if it were not a time saver. However, it is a real satisfaction to know that in our own family of six, the dishes are washed by fewer people in less than half the time, since we have installed the electric dishwasher.

PIONEERS

Veteran Electrical Appliances

Range Bakes 5980 Pies and 4784 Cakes in Twenty-three Years of Farm Service

THE stories below were submitted by farmers to Mr. D. B. Leonard, Commercial manager, Pacific Power and Light Co., Yakima, Washington. The first farm line was built by the Company in 1906 to serve five farms then operated by E. H. Shepard, James M. Hamblett, W. J. Baker, A. O. Hersey and H. W. Peugh in the Hood River Valley, Oregon.

IN 1935 *Joe Vannier of Rt.* 1, *Hood River, Oregon, parted company with an electric washing machine. The machine was first purchased in* 1909, *but did not come into Mr. Vannier's possession until* 1921. *Since* 1921 *it had been used once a week all the time and twice a week part of the time. The tub finally wore out and was replaced about* 1925. *The machine with the new tub operated up until* 1935, *when it was replaced with a new one. The old machine had a three-roll wringer, two leather belts and one chain belt, and with all this mechanism gave good service for over a quarter of a century.*

Mrs. F. D. McCully, of Joseph, Oregon, has established a service record for an electric range which will probably be a difficult one to exceed. She purchased an electric range in 1909 and operated it 23 years before it was replaced with a new one. During the period she used the old range, she cooked three meals a day and estimates that the range was used to bake 5,980 pies, 4,784 cakes and to roast 6,514 pounds of meat. Can you beat it?

IN APRIL, 1911, an electric washer was purchased by Roy Sanford of Pomeroy, Washington. From 1911 to 1913 the machine was used to wash clothing for fifteen persons. From 1913 to 1927 the machine washed for nine individuals. In 1927 the washer became the property of Mrs. Roy Dickson of Pomeroy and for eight years the machine had washed clothing for five persons. Ever since 1911 the machine had been operated every week, and it was still in service in 1935, then starting its twenty-fifth year. Leather belts were the only item of repair required during nearly a quarter of a century of operation.

PIETRO TALARICO, *of Route* 1, *Walla Walla, Washington, purchased a water system in May,* 1916. *It operated continuously to provide a dependable water supply for* 18 *years and it was still giving excellent service in* 1934. *It operated the first five years,* 1916 *to* 1921, *without a cent of expenditure for repairs. Since that time the total repair bill for new leathers, belts, etc., has totaled about* $8.00.

Clean, attractive interior of a locker plant. The lady is holding frozen chicken and strawberries.

FRESH BERRIES FOR CHRISTMAS

Now Is the Time to Pick Them—Freezing Fruits, Vegetables and Meat, the New Method of Preservation—Better Foods; Lower Costs with Locker Storage

By C. GAVRILOVA

Miss Gavrilova says: "I am a small town journalist who pestered a lot of people to get information for this article. She is from Puyallup, Washington.

STRANGE things are happening these days. The day before Christmas the writer visited a farm family living on the outskirts of Puyallup, Washington. Snow was falling and the red and green lights along Main Street at the foot of the hill looked like rubies and emeralds against the white background. Inside the homey room, up went a collapsible bridge-table and out unto it came cake, and with it—wonders of wonders—a dish of fresh raspberries.

Every day of the winter this family eats fresh corn, peas, beans, berries, fruits; and they say that since they began doing this their food cost has been cut in half. The answer, of course, was electric refrigeration. Those delicious raspberries turned out to have been frozen. Every one who has availed himself of such means of preserving produce tells the same thing: He eats more wholesome food stuffs at nearly half the cost.

Dietitians have found that frozen food compares nearest in nutritive value to fresh produce and is vastly superior to canned products of all kinds. Hospitals are one of the big buyers of the commercial frozen pack. Further, fresh fruits or vegetables, everyday after they are packed, lose a large percentage of their food value through enzyme action which changes their sugar to starch. As an example, tests have indicated that about seventeen per cent of the sugar in fresh sweet corn is changed to starch in 24 hours after picking. Underripe and over-ripe produce also drops from the top rating, while the frozen product retains its vitamin value.

Enough about dietitians—here is what a good many farm folks have already discovered. The family mentioned in the beginning, four persons living on a five-acre farm, do not make their own butter because butterfat brings only 2c less per pound than the cost of butter. Not so long ago when butter was so cheap, they bought 20 pounds at 22c a pound, the price per pound going up to 38c while their supply of butter remained in storage. The average cost of cold storage is $6.00 a year

Convenient cold storage locker plants are being built everywhere.

"Build-it-yourself" freezer unit. Machinery necessary for the zero box will also operate kitchen refrigerator.

for a locker of, at least, 150 pounds capacity. The contents of the locker will naturally change several times during the twelve months; refrigeration cost thus being 50c a month for 150 pounds, or ⅓c per pound per month.

Clean, sanitary cold storage locker plants are now conveniently located in many states, so that going there is usually no more of a task than going to the grocery. The freezer lockers are a new business, many of the plants being built in the past two years. To estimate the scope this business has reached in various parts of the country: The secretary of the Iowa Refrigerated Locker Association, in December of 1937, reported over two hundred cold storage locker plants in Iowa, "with more going in at the present time." According to the State College of Washington there are between 300 and 350 such locker plants in the State of Washington. To quote their letter: "Each plant averages 400 locker boxes, making a total of 120,000 individual units, and practically in every case every unit is rented." That means some 120,000 families in that one State are eating frozen foods.

Scientific processes for freezing perishables have been developed within the last few years. It is now known that just freezing is not enough. Food must be placed in very low temperatures to be quickly frozen. This largely prevents drying-out and chemical changes, leaving the product its natural appearance as well as flavor.

Freezing Improves Meat

Probably the greatest benefit from zero temperatures is in the case of meat. First, meat becomes more tender through freezing. Also, quality improves. Animals may be slaughtered when prime, regardless of season or price, and the meat frozen to be enjoyed the rest of the year. Preserving meat in fresh condition at ⅓c per pound per month is undeniably cheaper and more convenient than keeping it on the hoof. One man who has been preserving meat in such manner since 1932, prepares his own supply when market prices are lowest. The animals he has to sell are slaughtered and sold when meat prices are high. In this way he is making a double profit for himself.

Those who do not raise stock can buy meat wholesale in nearly all locker plants. Cutting and wrapping service is 1½c a pound in plants I know of, and will give any size of cuts desired. Earlier in the year good two-year-old heifer beef was sold by Western locker men at 10c and 11c a pound wholesale. Bought in the winter, similar cuts in butcher shops would cost, conservatively speaking, twice as much; yet the cost of freezing and storage remained only a minor item.

Garden products may also be successfully frozen: Gooseberries, raspberries, blackberries, cherries, apricots, prunes, pears, spinach, beans, corn, and many others. Those who have obtained the best results say that they use the higher grades of produce but can well afford to do so because of the annual saving; that is, buying in season and having the fresh article year round.

Fruits or vegetables to be frozen should be picked when they are ripened to just the right point for eating. Immediate freezing is very important. Some vegetables are blanched for a minute or two in hot water to set their color. They are then cooled and immediately frozen. Berries need only washing before freezing and are processed with or without sugar. Any locker plant or the Department of Agriculture will supply information for the proper preparation of each item.

In all cases, preparing foodstuffs to be frozen takes less time than canning them. Further, there is a saving not only in time but also in the fuel-cost for canning.

In short, refrigeration is a great boon particularly to the rural resident and farmer. While locker plants do offer a satisfactory and inexpensive service, freezing and storage of perishables can be done at home. Freezer cabinets to be installed in the basement may be purchased. A 3 x 3 x 6 ft. cabinet is sold by one manufacturer for $375.00, completely ready to be plugged into an electric socket. Such freezer boxes may also be purchased knocked down and ready for erection; or they may be built locally.

Here is the information the State College of Washington gave the writer:

"For a small family, a box of 5 x 6 x 2½ feet, or 75 cu. feet would be sufficient. Where the farmer builds his own box, which can be done by good workmen following our blue prints, the cost of the box itself will vary between $30.00 and $60.00." It would, however, be safest to buy a factory-built refrigerator door and doorframe.

Necessary machinery of course must be bought; compressors are electrically driven, using ⅓ to ½ h. p. motors. Many companies manufacture refrigeration units suitable for such boxes.

Chicken Population Lowest in 15 Years

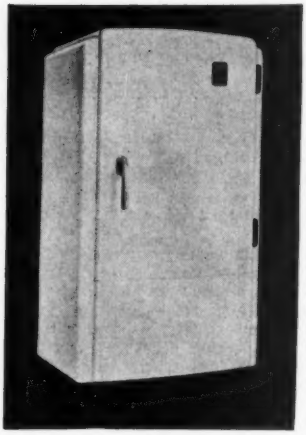
The number of chickens on farms January 1, 1938, is estimated by the Bureau of Agricultural Economics at 387,251,000, compared with 420,257,000 last year a decline of 7.9 per cent. Present numbers are 3.4 per cent fewer than in 1936, 0.7 per cent less than on January 1, 1935, and probably the lowest since 1922.

Of the total numbers on farms January 1, approximately 46 per cent were in the North Central States, 21 per cent in the South Central, 12 in the North Atlantic, 11 in the South Atlantic, and 10 per cent in the far western States.

ELECTRICAL HOUSEKEEPING

Conducted by GAIL MEREDITH

KEEPING UP WITH THE TIMES



I'VE NEVER had much patience with the men who tell us women to buy things for their homes just because their neighbors have them, and they do not want to be outdone.

That sounds so petty. Doesn't it?

But when I go home to think the matter over after I have exploded in the face of some man who will insist on telling me why women buy the things they do, I have to admit there is just enough truth in those statements to give them toehold.

I might be willing to admit that seeing an electric refrigerator in Kath Norbert's kitchen first set me thinking I had to have one myself, but I refuse indignantly to listen to any suggestion that I wanted a refrigerator because she had one. That wasn't it at all.

I remember very well the day I first saw that refrigerator. Six of us were there for lunch. I won't say she'd given the luncheon in honor of the refrigerator, but it did get most of the attention. In the first place she hurried us out to the table the very instant she was ready, so we could see the frozen cream cheese stuffing for the pear salad before it had a chance to melt.

And as soon as we had finished the last crumb of the chocolate ice box cake, we all trooped out into the kitchen to see this new machine for ourselves. It made a great impression on us, standing there big and white and clean looking.

We opened the doors; we examined the ice trays; we listened respectfully to the motor. *And* we began racking our brains for a place to get a little extra money.

"Is it cold all the time?" I asked.

"Just the same day or night." Kath's voice was proud and happy. "It's somewhere between 40 and 50 degrees. That's what the government calls the safety zone for food. I know things aren't going to spoil, and I can keep things from day to day that we had to either eat or throw out before. Left over food is just as good as it was when it first appeared, and, oh, the children do like to drink the cold milk, and eat the frozen custards and ices. I can get them to eat more salads, too, with the greens cold and crisp.

Safe food and more varied meals. Saved food and better meals. That was the backbone of our argument with ourselves over getting a new refrigerator at once.

But that wasn't all. Meta had a spring house at the foot of the hill. She didn't have to close her eyes and count on her fingers to figure how many trips up and down that hill a refrigerator in her kitchen would save. Esther hung her butter in the well; Beth had a good cellar, and three of us had ice boxes that had to be filled every other day all summer.

Behind our exclamations of wonder and admiration, we were all counting up the steps we'd save and the strength we'd save, and the time we'd save, if we had electric refrigerators too. Of course we all wanted one the minute we saw Kath's standing there in her kitchen. But don't let any man tell you it was *because* Kath had one. That just introduced us to it. We had heard of electric refrigerators before, but we'd never noticed any.

Now we were all worked up over the things it would do for us. We hated to think that we had to keep running up and down stairs with a pound of butter and a pitcher of milk, over and over, up and

A BOY CAN BE DAIRYMAN AROUND HERE NOW,.. AND REALLY LIKE IT, TOO!

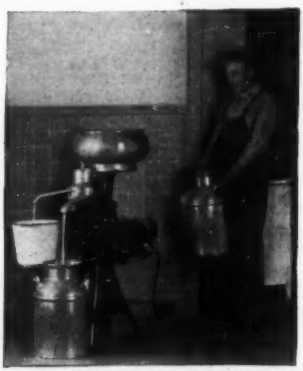
What boy doesn't enjoy helping with the milking when he can use a *McCormick-Deering Milker!* Both men and boys enjoy getting away from hand milking. They appreciate the larger money return from the sale of properly handled milk. We have many letters from users who say it pays to use a *McCormick-Deering Milker* to produce good milk, and to install a *McCormick-Deering Milk Cooler* to *keep* the grade at the top-profit peak.

A *McCormick-Deering Cream Separator* saves the dairyman much work, but it doesn't spare itself. It has to run at high speeds and it handles tons of milk each year . . . which calls for high-grade design and construction. *The McCormick-Deering is built to serve you well.*

McCORMICK-DEERING Milkers, Milk Coolers, and Cream Separators

MY SON AND I AGREE THAT IT PAYS TO USE McCORMICK-DEERING DAIRY EQUIPMENT

Ask the nearest McCormick-Deering dealer about the modern machines in the McCormick-Deering Dairy Equipment line.



McCormick-Deering Cream Separators are built in six sizes, for one cow or a hundred.

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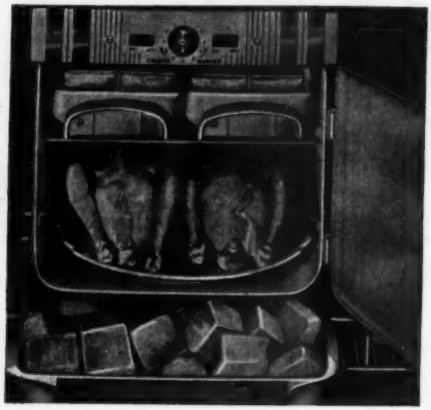
down, three times a day, that we had to put up with wilted lettuce, and have warm milk on the table,—when all the time there was a big, clean,



storage chamber, cold as winter and beautiful beyond our wildest dreams, ready to move into the most convenient corner of our kitchens.

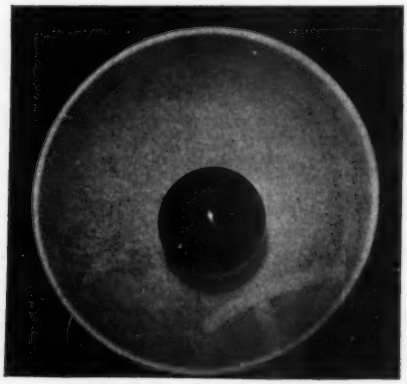
You see what I mean, don't you? In one sense we did, all of us, buy refrigerators because Kath had one. But land sakes alive, it wasn't because we had any feeling of jealousy or rivalry. We wanted refrigerators for what they would do for us, and Kath just showed us what that was.

I can't help but feel a little cross when men say that about us, for after all, we aren't trying to keep up with our neighbors, except as they help us to find the way to keep up with the times.

• • •

Lost Light

MATILDA is an excellent housekeeper, thorough and methodical. She even keeps a schedule of regular jobs tacked on the door of a



You lose light when you keep using blackened bulbs, or dusty bulbs in dusty bowls.

cupboard in the kitchen. That is why the bulbs surprised me so much.

E. R. had called my attention to them first, coming back from the bathroom grumbling about "lamps all over the house, but not a decent light to shave by."

He was still muttering about it when we went down stairs. Matilda is a distant cousin of his, and he helped her and Tom plan their wiring in the first place. I suppose that made him feel partly responsible for the light they have.

"Where'd you get those bulbs in the bathroom, Tilly" he asked almost before we had said good morning.

"Dime store," answered Matilda, looking somewhat surprised. "Why? They're cheaper and they look just the same."

"They aren't, though. You'd better stick to Mazdas. They are cheaper in the long run than those Japanese bulbs. What you want is light from the electricity that runs through your meter. Poor

UNUSUAL USES FOR ELECTRIC TOOLS

(Prize Winning Letter for February)

Unless you'd read these letters with your own eyes you'd never believe what a versatile thing an electric tool in the hands of a clever woman can be. Why the things they can do with vacuum cleaners alone would make your eyes pop out. I'll tell you about it some day, soon, too. And chick brooders hover pigs or pups as well as chickens, and fans have a busy life even when they aren't keeping folks cool. I was hard put to it to select any one letter; they were all so interesting. But I had to. So here it is, a letter from Mrs. Paul Balla, who lives in New Hampshire. What do you think of this? Pretty ingenious, I call it.

* * *

"I use my electric washer wringer for shelling green peas, or shell beans. I can many bushel of peas and beans each year, and use to rise 2 to 3 A.M. to get enough shelled for a canner full at 8 A.M. Two bushels was an all day job.

"I cover my wringer with strips of white cloth torn about 3inches wide, starting the wringer and letting the strips wind themselves onto the rolls. Cover splash board with wax paper, or clean dish towel. Place large pan inside tub. Start wringer, with very little pressure on rolls. Insert beans or peas pointed (not stem) end first. The pods pass thru into basket beyond wringer, the peas or beans fall into pan. They will not crush if little or no pressure is used on rolls.

"This method speeds up canning. Two of us shelled 1½ bushels of beans in 20 minutes; and in about 1 hour, alone, I can shell enough to fill 24 quart jars. Best of all, no sore fingers when the job is done. From garden to can in 1 hour's time.

"MRS. PAUL BALLA,
"Alstead, N. H."

"THE NEW WESTINGHOUSE MEAT-KEEPER IS A REFRIGERATION NECESSITY ON THE FARM,"

says Mrs. Koch, R. F. D., Grimes, Iowa.

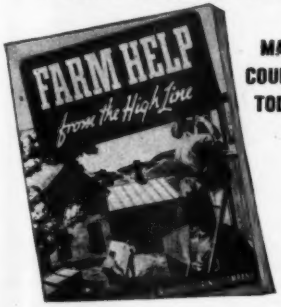
"Farmers really need refrigerators more than city folks because they aren't able to get to the market so often," says Mrs. Koch," and now with the special new meat storage compartment in my Westinghouse I can keep up to 14 pounds of meat for over a week . . . this means a lot to busy farmers!"

Many other farm folks, like Mrs. Koch, say the same thing about the sensational MEAT-KEEPER. That's because it's scientifically made to keep meat safe, fresh, and wholesome for days longer. You'll find the MEAT-KEEPER only in the new 1938 Westinghouse Kitchen-proved Refrigerator. Many other new food-keeping improvements make this year's Westinghouse a real buy for the farm. It's economical to operate, too. 10 hours out of 12 IT USES NO CURRENT AT ALL. Mail the attached coupon today for complete details.

ALL THESE NEW FEATURES *Kitchen-proved* IN THE 1938 WESTINGHOUSE REFRIGERATOR:

NEW *Super-Capacity* FROSTER, one third more space. Extra large HUMI-DRAWER for fruits and vegetables. Meat-keeper keeps meat safe, fresh, wholesome days longer. Refrigerator temperatures easily regulated. Sealed-in steel Economizer Mechanism with 5-year protection.

FREE CATALOG



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Please send me your free illustrated catalog, FARM HELP FROM THE HIGH LINE. I am especially interested in the items checked at the left.

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bulbs use just as much electricity as good ones, but they do not give near as much light."

He turned to me and whispered out of the corner of his mouth, "You tell her."

"Moreover, Matilda," I picked up the subject gingerly. "you won't get all the light you pay for if you don't keep the bulbs and those enclosing white bowls clean. I suppose they are the only things in this house that you do not scrub at least once a month, but they do need it."

"I declare," said Matilda, "I haven't washed off my bulbs in goodness knows when. I'm glad you spoke about them, Gail."

"Put them on your schedule for a monthly cleaning and you'll save quite a good bit of light."

"Yes," my husband came back cheerfully now that the ticklish matter of Matilda's housekeeping was out of the way. "Good Mazda lamps will give you as much as 25% more light for the same money than the ones you are using. And if you'll add to that the extra light you'll get if you keep the dust off those bulbs,— why it makes a saving worth thinking about."

• • •

A Good Egg

IF you use eggs, you may like to hear what Katherine Bele Niles told a group of us about them at a meeting last January. Mrs. Niles is home economist for the American Institute of Poultry

Industries, so what anybody knows about eggs, she knows too.

To begin with, she impressed upon us most vehemently that eggs are just as perishable as meat and butter, and must be treated just the same way to preserve their quality.

Somehow or other, she says, the idea has spread about that eggs should not be refrigerated, that in some mysterious fashion, cold is bad for an egg.

"That theory is absolutely false," Mrs. Niles said. Men and women who have spent their lives in studying and experimenting with the marketing and cooking of eggs have proved this by their work. Storing eggs at room temperatures for even a few hours changes the make-up of even the best of eggs, changes them in a way no amount of later refrigeration can undo. Such eggs may taste all right, and are harmless if you take them in time and chill them, but they will not keep as long as they would had they been properly chilled."

It makes no difference whether you are keeping them for just a few hours, or for several days, waiting to fill the case to take to town, whatever the time, holding them at a temperature between 45° F. and 60° F. is the only safeguard for them. In an electric refrigerator you can maintain the even low temperature which eggs or any perishable foods need.

Did you ever cook up a dozen eggs to devil for a picnic to find a paper thin edge of white on one side and a thick wall on the other? I have often, and I never knew why until Mrs. Niles explained it to us.

"In a new laid egg," she said, "the yolk is held in the center by slender cables fastened at each end of the egg and held in the thickness of the white."

Perhaps you knew this all the time, but I found it so interesting that I wanted to tell you about it, too.

"Keeping eggs in a warm room for a day or even a few hours, changes the white. It becomes thin and cannot hold on to the small cords between the yolk and the shell. The yolk is set free and floats about in the white. About a third of the yolk is fat, and since it is lighter than the white, it floats toward the top of the egg whichever side is up. Generally eggs are stored on end in the cartons or the egg case, so the yolk floats to the upper end."

Mrs. Niles told us some tricks in using eggs that I was glad to know, too.

"Eggs that are several days old, eggs with a watery white, will whip up more readily and have greater volume than day old eggs."

Moreover, egg whites beat up more readily and seem fluffier if they are a little warm. So it is a good thing to take the eggs out of the refrigerator and let them stand in the kitchen until they warm, or if you are in a hurry, in a bowl filled with warm water. But you want to be careful not to get that water too warm. If you cook with a thermometer, do not let the water get warmer than 77°.

Just one more thing about beating up those egg

whites. Even a tiny bit of fat will cut down the foaming, so you want to make sure there is none of the yolk in the bowl with the white. Since the

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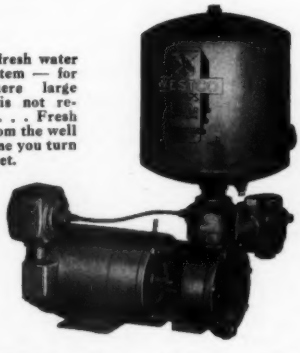
There's no reason in the world why you can't have a WESTCO electric automatic water system working for you on your farm. The initial cost is low and be assured that the operating cost will scarcely be noticeable. WESTCO gives you all the benefits of running water for all purposes . . . just turn a faucet. It's the original turbine type pump—the World's Simplest Electric Pump . . . with only One Moving Part . . . the All Bronze Impeller that operates without metal to metal contact . . . the pump that is 100% automatic —that is quiet, safe, clean, dependable . . . that will give you A-1 performance 365 days a year and not ask for time out. And here's something to remember—ONLY the WESTCO is equipped with Patented All Bronze Removable Liners which prevent rust and corrosion . . . your assurance of years of satisfactory, uninterrupted service. Fill in and return the enclosed coupon today and we'll be mighty happy to send you complete information on the WESTCO without obligation.



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fat of the yolk is firmer when it is cold, it will separate better and be less liable to break, if you separate the eggs as soon as you take them out of the refrigerator. Then you can let them stand until they are warm enough to beat well.

Keep them cold to preserve them—but take them out of the refrigerator quite a while before you want to use them, not only for beating, as I've been telling you, but for cooking to eat, too.

Very likely you've put a cold egg, an egg right out of the refrigerator, into a kettle of steam and had the shell crack and let a bulgy mass of white through. You've probably put a cold egg into a hot pan and had the yolk break in a discouraging fashion. The extremes of temperature do it.

• • •

Using
Canned Vegetables

WHEN the gardens begin to show green, it isn't always easy to keep on eating can after can of the same vegetables we've had all winter. But since fresh vegetables from our own gardens are still far ahead for most of us, we will have to do it whether or no. And the best thing we can do is find new ways of serving that will coax everybody into fresh enthusiasm for them.

Miss Charlotte Clark, a friend of mine who is an extension nutritionist at the University of Wisconsin, has some good suggestions about using any canned vegetables. Perhaps you've always done this. If you have, just skip a paragraph, please, but if you haven't, it is worth pausing to think about.

"When a can of any vegetable—home or commercially canned—is opened, any vegetable except tomatoes," she says, "empty it and heat it until every bit of the solid part of the vegetable is boiling hot. Do this regardless of how the vegetable is to be served, because it is a precaution against botulinus poisoning. However, since canned vegetables have been cooked, care must be taken not to boil them to pieces or to stir and crush them."

Spinach and bacon, with buttered bread crumbs over the top.

Then Miss Clark takes a can of our old friend spinach and concocts a dish that would thrill Popeye. She calls it scallopped

Spinach and Bacon

1 pint can spinach
3 tbsp. flour
¾ cup cracker or bread crumbs
¼ pound bacon, cut in small pieces
1½ cups milk
¼ cup melted butter

Drain the spinach and place in a buttered baking dish. Fry the bacon until crisp, and add the flour and milk. Cook the mixture until thickened and pour it over the spinach. Mix the crumbs and butter and sprinkle over the top. Brown in a hot oven, 400 to 425 degrees.

Miss Elizabeth Ellis, of the New Hampshire Extension Service, offers a vegetable souffle and a vegetable short cake that will help any can of vegetables toward fame.

Vegetable Souffle

3 eggs
1 cup milk
4 tbsp. flour
1 c. canned vegetables. (chopped or mashed, or put through a strainer)
4 tbsp. butter
Seasonings

Make a thick white sauce with the flour, butter, milk, salt. Add to well beaten egg yolks seasoning and vegetable. When cool fold in egg whites stiffly beaten. Turn into buttered baking dish, place in pan of hot water, and bake until firm in a moderate oven. 350 degrees. Serve immediately. Cheese improves the flavor of vegetable souffles. Add ¼ cup grated cheese to white sauce.

Vegetable Shortcake

2 cups flour
4 tbsp. fat
4 tsp. baking powder
1 egg
½ tsp. salt
½ cup milk

Make the above ingredients into a biscuit dough. Roll into two half inch layers, brushing the bottom one with melted butter before

May Contest

It was probably my fault. It may have been the printers, or the proof readers, but everyone scowls at me, and since I can't even find a copy of the notice I probably did tell you to send in your March contest letters by February 20. Fortunately quite a lot of you, having made mistakes yourselves sometimes, I suppose, just said tolerantly, "Well, we couldn't do it, so she must mean March," and sent along your letters anyway. I appreciate that. But because there were far too many of you who might have told me just what drawers and shelves you would like in the kitchen you plan yourself, but didn't, I'm going to try again.

Think of all the things you have to store and tell me where you'd like to store them. Set the children to work taking inventory. Get the family to help you plan. Who knows, perhaps besides winning the five dollars for the letter that tells about it, your plan might grow, with a tearing down and building over, into the shelves and drawers themselves.

Now this letter is due on May 20, May, this very month. And it should be addressed to me, Gail Meredith, at 1026 Seminole Highway, Madison, Wisc.

If your letter does not win the contest, but we do use it later, we will pay you one dollar.

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WITH NEW SILENT METER-MISER

New SILENT METER-MISER

Simplest Refrigerating Mechanism Ever Built!

Uses so little current—saves up to 25% MORE on electricity than even the current-saving Meter-Miser of 1937! So amazingly simple you can't doubt its ability to give long, economical, trouble-free service. Comes with 5-Year Protection Plan backed by General Motors. See PROOF of its money-saving power!

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Saves More on Current, Food, Ice, Upkeep

SAVE ALL 4 WAYS

OR YOU MAY NOT SAVE AT ALL!

Do you know that some refrigerators cost twice as much as others to keep food safe and freeze enough ice? That some may "eat up" in repairs everything they may save in all other ways?

Why take a chance when you can own a genuine Frigidaire with New Silent Meter-Miser . . . and get *proof* before your eyes, before you buy, that it saves not just one, or two, or three ways, but *All 4 Ways* at once! See the *proof* at your Frigidaire Dealer's!

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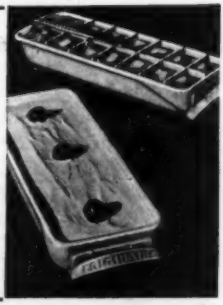

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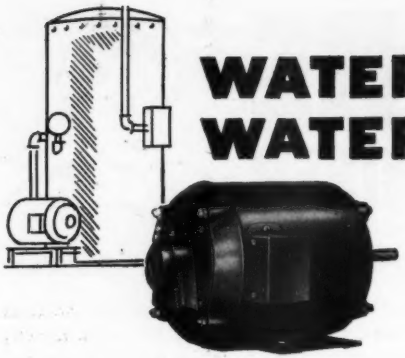

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That's how necessary running water is to every member of the farm family.

It brings to you one of the biggest conveniences in life.

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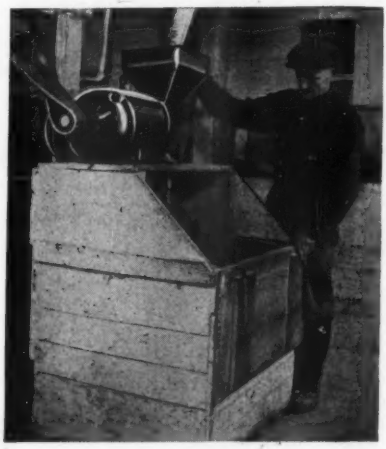
putting on the top. Bake in a hot oven, 400 degrees 12-15 minutes. At serving time lift top, butter well, fill with cooked asparagus tips; carrots and peas; asparagus and peas, or any combinations of vegetables desired. One half cup minced ham or bacon may be used for flavoring. Moisten very liberally with medium white sauce. Have all very hot. Replace top, brush with melted butter and serve with garnish of a ring of very thinly sliced hard cooked eggs over which a little melted butter has been poured and chopped parsley sprinkled. Cheese sauce may be used in place of white sauce by adding ¼ to ½ cup of grated cheese to it.

Miss Ellis prepared these recipes and many others just as good for Extension Circular 109 published by the University of New Hampshire extension service.

Canadians Grind Feed with Small Motors

The accompanying illustration shows a typical feed grinding installation on a Canadian dairy farm. There are many just like this. The motor is 1½ h.p., direct connected to a small burr mill. The



whole outfit is mounted on the top of the bin in the feed alley. Grain is spouted into the mill from an overhead bin. When the farmer comes out in the morning to do his chores, he starts the motor and pulls the slide in the feed spout. The motor does the grinding while he does the chores. These Ontario farmers almost universally seem happier over their feed grinding installations than any other piece of equipment they own.

World Record Cow Milked by Machine

FEMCO ALMA a purebred Holstein owned by Femco Farms, Breckenridge, Minn. completed a test on January 9 which makes her the world's greatest producer of butter fat of any junior 2-year-old cow of any breed. Her record is 1,002 pounds of butterfat in 365 days.

While Femco Alma is a beautiful cow of excellent breeding, the most interesting fact in connection with her record to readers of ELECTRICITY ON THE FARM is that the record was made with machine milking.

Two Letters I Read

A Story of Courage and Progress for Poultrymen

MRS. WHITEMAN is approaching seventy. Her husband has cancer. Ill health, coupled with demoralized prices, has caused them to lose their farm. They have not given up, however, and are starting over. Quotations from two letters which have recently come to our attention, should be interesting.

"Mrs. Mary McKinney,
Hartford, Kansas:
Dear Old Friend:

"I am bothering you for your advice on the value of electric brooders. Do you think they are safe and good as stove brooders? We want to get a good brooder for 200 or 300 chicks. Please drop a card soon, as I depend so much on your good judgment about it.

"Your dear friend,
"MRS. CHARLES WHITEMAN."

"*Dear Mrs. Whiteman*:

"I was delighted to get your letter. Your dauntless spirit is an inspiration to me. If only we had more folks in this world with such vision and courage.

"We are very much pleased with our electric brooder. Have used it three years now and Mrs. Walter Jones used it several years before that. It does not cost any more to operate than an oil brooder and there is no danger. The heat turns on and off automatically. We have used peat moss on the floor. All I do is keep feed and water before the chicks. It is mere play. When I think of the struggling you and your mother had with hens and chickens it seems unbelievable that it is so easy to raise chicks today. Isn't it wonderful that you have lived to see this miracle? For to me an electric brooder is a miracle.

"What kind of a brooder room will you have? We have a sun parlor in front of the brooder house which has a hail screen floor. It is a grand place for the chicks but probably you would not use one so much at this time of the year. We think that keeping young chicks off the ground for the first twelve weeks prevents worms and other parasites which infest the ground.

"The type of brooder that you buy is quite important. Some use much more electricity than others. We have a ——— brooder. They have many of these at State College. I am writing a friend of ours in the Power Company to demonstrate one of these brooders to you.

"Love,
"MARY FRANCIS."

Radio Accounts for Half Can of Milk.

"WE just got the radio repaired," volunteered Alfred E. Meyer of DuPage county, Illinois. "I've always laughed at these stories of radios causing cows to give more milk but just the same, during the four days the radio was out of the barn these cows fell off a full half can of milk a day! As far as I could figure, there was no other change. I think when music is being played, we are more deliberate and careful. Rush, hurry, and loud talk always seem to disturb the milk flow.—*Hoards Dairyman.*

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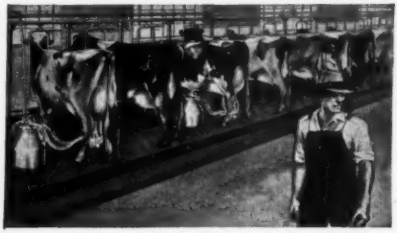

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BENJAMIN
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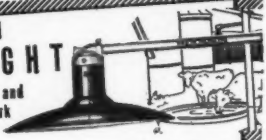

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on the farm! Think of how your family and friends will enjoy a yard floodlighted for night sports, night parties, etc. Provides protection against prowlers, too! Use it for night work. Take it from one location to another. A quality product made of lifetime porcelain enameled steel. Complete with unbreakable plug and extension cord . . . efficient—low priced.

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Questions and Answers

Why Defrost a Refrigerator?

Question: *I would appreciate your answers on the following questions: (1) Why does an electric refrigerator have to be defrosted? (2) What would happen if it were neglected? (3) Are there any particular points to remember in order to operate a refrigerator as cheaply as possible? (4) All points being equal, does an ice box preserve food better than a refrigerator? (5) I noticed food dries up more in a refrigerator.* D. A. P.

Answer: (1) To remove the coating of frost on cooling coils in the box. (2) Thick frost will build up on the cooling coils. The thicker the frost the more electricity is required to cool the box. (3) Follow the manufacturers instructions. Defrost regularly. Place the refrigerator where it will have a reasonably good circulation of air around it. If it has a temperature control use it at the low temperature only when needed for fast freezing, or making ice cubes or desserts. (4) Generally an electric refrigerator is maintained at a lower temperature than an ice box. This is preferable. The refrigerator temperature is maintained by an automatic control. The temperature in the ice box may vary with the amount of ice in the bunker. (5) Because of the warmer temperature and the melting ice in an ice box the air in this box is more moist and food does not dry out so readily. To prevent drying out in an electric refrigerator, green vegetables, meats and similar food products should be put in covered dishes, placed in treated bags made for the purpose or wrapped in wax paper. Hydrator pans may be purchased at hardware or department stores.

Electric Caponizing

Question: *Will you please tell me if you would recommend an electric caponizing set? If so, what one do you recommend?* W. I. J.

Answer: "The electrical equipment is practical and probably as efficient as the other types of caponizing instruments. There is a possibility that the number of slips may be reduced by the use of the electric remover, but otherwise I do not know of any particular merit." From Cornell Dept. of Poultry Husbandry. The only electric caponizing set we know of is manufactured by George Bueoy, Cedar Vale, Kansas.

Bucket vs. Blower Elevators

Question: *What would be the difference in cost of elevating grain with a bucket elevator and with a blower, using a 5 h. p. motor or smaller? Who are some of the manufacturers of blower type elevators?* C. K. E.

Answer: Cup or bucket elevators use from 2 to 5 kw-hrs. per 1000 bu; blower type from 10 to 15 kw-hrs. per 1000 bu. Unless you have a great deal of grain to elevate, the power cost will be of less importance than first cost and convenience. A

special blower elevator is sold by Mitchell, Lewis and Staver, Spokane, Wash. Hammer mill and ensilage blowers are suitable for use. Other manufacturers are John Deere Plow Co., Moline, Illinios., Cup type; A. T. Ferrell & Co., Saginaw, Mich., Cup type; Link Manufacturing Co., St. Louis, Mo., Blower type. Motor size for either type varies from ½ h. p. up.

Wiring Code—Wire and Switch Sizes

Question: *Where can I buy a copy of the Standard Wiring Code now in effect? One of my houses is 300 ft. from my transformer pole and the other 500 ft. What size wire will be necessary to each house for an electric range? What size meter switch?*
L. S. M.

Answer: The 1937 National Electric Code book may be secured from the National Board of Fire Underwriters, 222 W. Adams St., Chicago or 85 John St., New York City. Price 5c. This code book is not a wiring instruction book. It gives the rules for safety. See March issue, p. 30 for announcement of a new book on wiring. ELECTRICITY ON THE FARM puts out a Wiring Guide. Price 10c. Cornell University, Ithaca, N. Y., North Carolina State College, Raleigh, N. C., and the Wisconsin Extension Service, Madison, have issued bulletins on wiring. To avoid a voltage drop of more than 5 per cent use No. 2 wires to the closer house and No. 0 wires to the house 500 ft. away. Use 60 ampere entrance switches in each house.

What Size Motor? Wire Sizes and Voltage Drop; Church Lights?

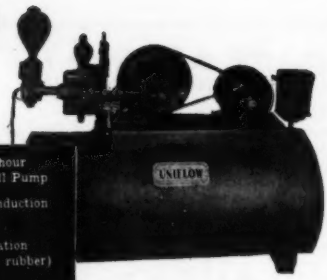
Question: *In Sept., 1929, I installed an electric milk cooler equipped with a ½ h.p. motor. It starts very hard and I have ruined one motor and practically put another one out of use as far as starting such a heavy load is concerned and I must get another in a few weeks. A ¾ h.p. will start the outfit much better, but how much more current will it use than a ½ h.p. with current at 2c a KW?*

We fill our silos with a Century 7½ h.p. 870 r.p.m. motor located about 180' (one way) from a 5 K.W. transformer. How much more power would we have with a No. 2 or 0 wire instead of the No. 4 that we now use?

Our church is lit with 12 pendant lights hanging about halfway down from a 35' ceiling. They are the old fashioned clear glass shades (inverted bowl type) with clear bulbs. They are very hard on the eyes. Isn't there a different type bulb, silvered base or something like that would improve the lighting without having to change fixtures?
B. P. T.

Answer: By all means use a three-quarter horsepower motor on your compressor. It is evident that your one-half horsepower motor is considerably overloaded when starting the compressor. Under these circumstances the three-quarter horsepower unit would probably use less electricity than the one-half horsepower motor. Even if your compressor required only one-half horsepower, the efficiency of the three-quarter horsepower motor in doing only one-halt horsepower of work is such that the power consumption would be practically identical with that of the smaller size motor. In

$69.00 FOR THE GEM "30"



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Uniflow pumps start at $48.00 and complete systems start at $55.00. Write for our complete catalog—our 20 years experience is yours on any water supply problem, for the asking.

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Lightens Chores
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MAKES HOUSEWORK A PLEASURE
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THE BURKS Super Niagarette TURBINE
WATER SYSTEM
ONLY ONE MOVING PART
NO Gears, Pulleys, Liners, Pistons, Belts, Cranks, Chains, Leathers, Valves — To interrupt performance; To make costly repairs necessary; To crush inquisitive little fingers

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The Blizzard Ensilage Cutter and Hay Chopper operates with ease and amazing satisfaction with electric power. At Michigan State College 4 silos were filled with a total of 188 tons of ensilage at a total power cost of $5.34 using only a 5 h.p. motor.

Many farmers have found that the Blizzard and electric power make an ideal, profitable combination. Get free catalog at your dealer's or write us direct.

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Box E, Canton, Ohio

other words the motor uses only that amount of electricity which is necessary to turn the load placed on it.

You would get very little additional power from your 7½ horsepower motor by substituting No. 2 or 0 wire for the No. 4 which you are now using. On a 230 volt circuit your motor should draw about 34 amperes at full load. Under these conditions the voltage drop in your 180 ft. of line would be about 3 1/10 volts. This is not serious. The voltage drop in No. 2 wire would be about 2 volts. It would not pay you to change.

Inside silvered lamps are now available. They would not be suitable for your Church fixtures because they reflect all of the light upward and must be used in special reflectors. You will get some relief from glare by using inside frosted lamps in your present reflectors. My recommendation however, would be to purchase new fixtures. If you are not particular about having something fancy you will get good illumination from inexpensive fixtures made of a white glass enclosing globe, similar to a standard kitchen lighting unit, but of larger size. Such units as this are used in many hotels and public buildings. It is possible these enclosing globes may be substituted for the glass on your present fixtures without having to buy complete new fixtures.

Water System Location

Question: *We are planning to install a water system this spring. Our well is at the barn 140 ft. from the house. The water level in this well is about 8 ft. from the surface.*

We want to install the water system in the house (preferably one of the systems with a small enough supply tank so it can be put under the kitchen sink and a cabinet built around it). We would of course expect to pump the water back to the stock tank for our livestock.

Here is the problem, is this type of water system practical (the ground is level between the house and barn)? Would it have to be a deep well or shallow well pump? and how large pipe should we use between the well and pump? L. F.

Answer: You can install a shallow well pumping plant under the sink in your kitchen and connect it to your well at the barn 140 feet away, but I would advise you not to do it. If you do make your pump installation in the kitchen you should have the vertical distance from the cylinder of the pump to the water level in the well measured accurately with surveying instruments or with an accurate carpenter's level. If the total lift is more than 12 feet you will probably have trouble with the pumping outfit. If the lift is 12 feet you should use one and one quarter inch suction pipe between the pump and the well. If the lift is only 10 feet you can use one inch suction pipe. In either case a check valve should be placed on the end of the suction pipe in the bottom of the well. This will prevent water flowing back into the well and making it necessary to pump out the air each time it is started. A much better installation would be to place your pump over the well at the barn. You could place the pump in a pit below the frost line to protect it from freezing. A one inch pipe from the pump to the house would be adequate and it would not be necessary for you to run another pipe from the house back to the barn for watering stock.

ON THE AIR

Conducted by JEROME J. HENRY

MacQuarrie Weighs Talent vs. Personality

OF all the stars in Hollywood, there are only nine whose popularity is due entirely to their personality, according to Haven MacQuarrie, who has been the guiding genius of more than 700 motion picture productions and stage plays and who is now presenting aspiring actors in an NBC series.

These nine, he says, would attract huge throngs to any theatre in the country because the public is interested in them as individuals rather than as performers. The nine he names are:

1. Charles Chaplin, because of the universal appeal of the character he has created.
2. Robert Taylor, because he typifies "the great lover" and "Prince Charming."
3. Clark Gable, because of his masculinity.
4. Greta Garbo, because of her glamour.
5. Shirley Temple, because she represents the eternal appeal of children.

Lovely Helen Musselman is one of the stars in the broadcasts known as One Man's Family. She plays the role of Eva Mills.

6. William Powell, because he symbolizes the true sophisticate.
7. Marlene Dietrich, because she is the eternal "feminine."
8. Carole Lombard for her wit.
9. Myrna Loy for her charm.

The other famous stars, according to MacQuarrie, can attribute their fame more to talent than personality.

• • •

Ever See Station Change Hands?

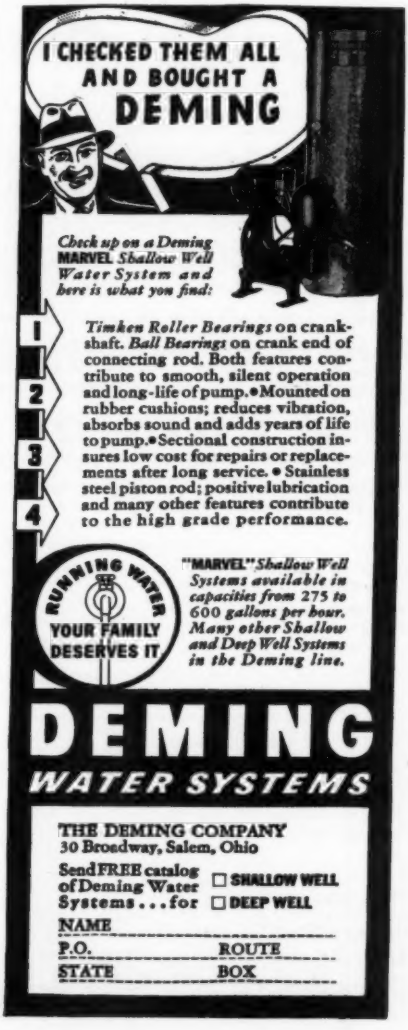
NBC gave away a radio station not long ago and the recipient carried it away in his pocket.

Rather unusual, but then the radio station is unusual. It's the famous "coat pocket" transmitter, the tiniest radio station in the world and was presented to Jules Charbneau, owner of a museum of nearly 26,000 miniature objects. The transmitter is now part of the great collection.

This midget micro-wave transmitter, housed in a three inch cube and weighing less than a pound, propagates a wave of one meter length or a frequency of 300 million kilocycles. It uses a tiny "acorn" tube and has a special dipole antenna.

It is the forerunner of a slightly larger transmitter now used widely in the field for special broadcasts from points of interest.

The transmitter, incidentally, is the largest item in the Charbneau collection. The collection includes such items as a miniature pipe organ made in France 150 years ago, a script of 295 letters on a space the size of a needle point, 3,000 spoons in


I CHECKED THEM ALL AND BOUGHT A DEMING
Check up on a Deming MARVEL Shallow Well Water System and here is what you find:
1
2
3
4
Timken Roller Bearings on crankshaft. Ball Bearings on crank end of connecting rod. Both features contribute to smooth, silent operation and long-life of pump. • Mounted on rubber cushions; reduces vibration, absorbs sound and adds years of life to pump. • Sectional construction insures low cost for repairs or replacements after long service. • Stainless steel piston rod; positive lubrication and many other features contribute to the high grade performance.
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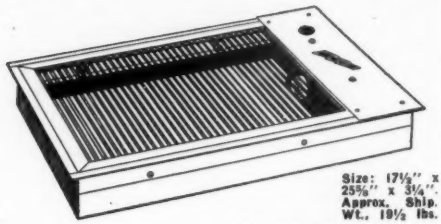

Size: 17½" x 25⅝" x 3¼". Approx. Ship. Wt., 19½ lbs.

Model 10-A

$18.50

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an acorn, a seed containing 33 carved elephants, a smallest camera, fountain pen and radio receiver. Charbneau has recently added the smallest cut diamond to his collection, but he is still waiting for some enterprising manufacturer to build him a workable automobile six inches long. He has the motor one and a half inches long, ready for installation. He began his collecting during the Paris exposition in 1900 and constantly tours the world exhibiting his priceless objects.

• • •

McGees Tell About Making Movie.

"WE didn't know nothin' about motion pictures when we went to Hollywood and we don't know much more now that we've finished our first pictures," Fibber McGee and Molly are saying. They recently completed a movie in Hollywood.

The ace comedians were especially struck by the fact that a motion picture is made in pieces and then fitted together in some dark room. "Why

Bottle and his boss, Phil Baker, caught by a candid camera man as the laughter breaks in one of their broadcasts.

we didn't even see some of the actors who play in the picture with us," they reported.

"That seemed kinda funny to us, specially since in radio every member of the cast is present both during the rehearsal and the actual show. Still we did get to see Buddy Rogers singing and we met some nice people like Gail Patrick and Bing Crosby. Guess the reason we got to see them was the fact that they weren't working in the picture with us."

Molly said she got a big kick out of posing for a picture with Marlene Dietrich, but agreed with Fibber that they got more fun out of the prize-fights in Hollywood than anything else.

Going on with their story they said: "You know we'll be just as anxious as anyone else to get to see our picture. We've scarcely an idea of what it is, so when it comes out it'll be like seeing a brand new show to us except for the scenes we're in, and it'll be fun to see our shadows moving around up there on the screen and talking like we do in our radio broadcasts over a nationwide network."

Blessed is he who expects nothing for he shall never be disappointed.—*Pope.*

Reviewed by T. E. HIENTON

Names and addresses of manufacturers of the articles described in this column will gladly be furnished upon request to What's New Department, ELECTRICITY ON THE FARM, *24 West 40th Street, New York, N. Y.*

Electric Vacuum Cleaner

Any day may be cleaning day in the farm household for tiny shoes which have strayed into the mud frequently leave some of it on the rugs. Farm mothers, often busily occupied with care of the garden, flowers, or poultry in addition to their household tasks, readily accept the electric vacuum cleaner as one of the necessary electrical household tools.

An improved model of cleaner is a recent announcement of an eastern manufacturer of household appliances. A ball bearing motor which requires no oiling may be operated at low or high speed to drive the brush. Light is furnished in front of and on both sides of the cleaner by a 15-watt Mazda lamp. Extra attachments include a utility brush, radiator tool, blower, connector, demother, and can deodorant.

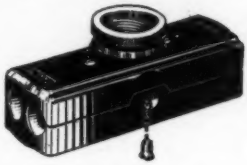
Air Recirculator

Keeping cool with the Joneses is far more important than keeping up with them. Keeping comfortable in the farm home as well as the city one is often a difficult problem during hot weather. The men of the farm household may gain some comfort from the heat during the day when breezes blow but the women must do much of their work indoors where the breezes never reach.

A new air recirculator announced by a middle western manufacturer is designed to provide comfort in the household. This device distributes the air laterally in a circle from the floor. It is driven by a 1/20-horsepower motor. There are four models of this combination table and air recirculator, three of which are for three speed operation and the other for single speed.

Porcelain Surface Wiring Devices

Porcelain devices for surface wiring installations are being produced by an eastern manufacturer. These porcelain devices include dead end and feed-thru switches, keyless and pull receptacles, rosettes, junction boxes and duplex convenience outlets. According to the manufacturer the surface installation using such devices eliminates splicing wires, soldering joints and application of both rubber and friction tape.



Bakelite Outlet Boxes and Covers

Outlet boxes and covers of bakelite, especially designed for use with non-metallic sheathed and CNX type cable wiring, is now being manufactured

ENJOY RUNNING WATER FOR HOUSE AND FARM
WITH A
DELCO PUMP
IT PAYS FOR ITSELF!

● Know the convenience of running water—*under pressure*—day in and day out, all year round. Own a Delco Pump. That's the easy, economical way to have plenty of water—up to hundreds of gallons an hour—for washing, baths, dishes, in the house; for stock, hotbed and garden and other needs out of doors.

PRICES LOWER THIS YEAR!

Prices are lower on some models this year. Choose the one that fills *your* needs—suits *your* pocketbook. It will save enough to pay for itself—and give you a profit besides! . . . Delco Pumps are available in deep or shallow well models—110 volt or 32 volt. See your local Delco Pump dealer now for full particulars.

Delco Pump Model C-12

Completely automatic operation—capacity 225 gals. per hour—12-gal. tank for storage purpose. This model for shallow well service.

Low Price
Low Operating Cost
Long Life
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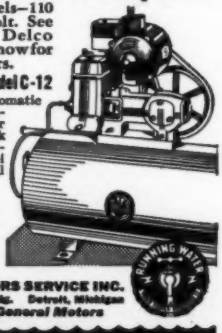

UNITED MOTORS SERVICE INC.
General Motors Bldg. Detroit, Michigan
Product of General Motors

by an eastern company. The sizes and design are the same as standard metal outlet boxes except

for clamps and wire knockout. These outlet boxes have knockouts and clamps to take 14-2, 14-3, and 12-2 non-metallic sheathed cable, and 14-2, 14-3, 12-2 and 12-3 CNX type cable.

Photo-Electric Door Control

Opening and closing the garage door from the seat of the car is made possible by a photo-electric door control developed by a Middle Western manufacturer. This device is reported to be equally efficient for day or night operation. It is mounted on the rear wall of the building in line with a headlight on the car. Glass is located in the door itself to allow the projected beam of light to strike the control. One hundred and ten-volt service is necessary to actuate the control.

New Bulletins

"HOTBEDS IN KANSAS," Circular 183, Kansas State College, Agricultural Experiment Station, Manhattan, Kansas. September, 1937.

"FEED GRINDING, MIXING, AND ELEVATING," Popular Bulletin No. 151, Washington State College, Agricultural Experiment Station, Pullman, Washington. September, 1937.

"DEVELOPMENT OF LOW-COST ELECTRIC COOKING EQUIPMENT," Bulletin 310, Virginia Agricultural Experiment Station, Virginia Polytechnic Institute, Blacksburg, Virginia. October, 1937.

More Profit From Milk

(*Continued from page 8*)

ges on the equipment, as low as 6 cents a hundred pounds and as high as 15 cents a hundred.

On the average, it is likely to take about 1 Kwh of electricity to cool and store a 10 gallon can of milk. In other words, a kilowatt hour of current has as much effect as 30 pounds of ice. It is much more convenient to use, and generally costs less.

Best of all, we found instances all over the country where the premium for better-than-average milk is from 10 cents to 80 cents a 100 hundred pounds. Milk plants everywhere want the better product and are willing to send out their trucks many miles to get it.

Late in the afternoon, as we stacked up the bulletins, Max, who is a great reader and something of a historian, summed up the situation.

"You know," he said, "this problem of cooling hasn't changed since Cleopatra's camels chewed their cuds along the Nile. It gives me great satisfaction to realize that I can solve it easier and better than even Cleopatra could. With all her wealth and power she couldn't keep milk sweet. When it soured, all she could do was send a slave to milk another camel."

Electric Fences Keep Bears Out of Apiaries

BEARS with their craving for honey—whether pawed from a wild "honey" tree or pilfered from a commercial hive—have long prevented much good bee-keeping land in the mountains of the Pacific States from being used. These marauding bruins, it now appears, can be thwarted by putting electric fences around apiaries.

Apiculturists of the United States Department of Agriculture, working in cooperation with the University of California, find that bears violently dislike contact with an electric charge.

The Department and State tests showed that a sturdy fence with four charged wires on insulators is better than a fence with just the top wire electrified. Such a fence is not very expensive, the investigators say. The material used for the trial fences around several commercial apiaries cost from $10 to $40. A set of four dry cells kept the four wires charged for 2 months, making the outlay about 3 cents a day. As bears are most active at night, a sun-operated thermostat that automatically stops current flow during the day can be used to add to the life of the battery.

Never make a defence or apology before you be accused.—*Charles I.*

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